MSW Options Workshop: Integrating Organics and Residual Treatment/Disposal

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Presentation Overview

- Background
- Technical Reports
- Study Assumptions
- Evaluation Indicators
Background

- 12 m tonnes of waste generated by Canadian households in 2002 (382 kg/person)
- 5% increase in household waste generation since 2000
- 301 kg/person (78.7%) is disposed, 81 kg/person (21.3%) diverted
- 2% increase in disposal and 1.3% increase in diversion as compared to 2000
- Nationally Canada still disposes 79% of the residential waste stream
Background

- 50% diversion target set in late 1980’s with the target date of 2000
- A few municipalities have achieved the target – National diversion 21%
- Broad range of waste management technologies available but difficult to sort through them and implement systems
- 2004 FCM releases *Solid Waste as a Resource Guide for Sustainable Communities*
- Document provides an overview of integrated solid waste information, policies and technologies – Resource tool for municipalities to evaluate their systems and make decisions on future directions

www.sustainablecommunities.ca/capacity_building/waste/solid_waste_as_a_resource.asp
Information being presented today builds on the FCM Guide by providing detailed information on:

- Composting
- Anaerobic Digestion
- Sanitary Landfill
- Bioreactor/Enhanced Landfill
- Thermal Treatment
Study Assumptions

- Each technology to look at 3 population sizes 20,000, 80,000 and 200,000
- Residential waste to disposal – 300 kg/person was used, the amount currently diverted 81 kg/person or 21% is already being removed
- Waste composition – three municipal waste composition summaries were used
  - North Glengarry, ON 10,600 population
  - Sudbury ON, 85,000 population
  - Calgary AB, 880,000 population
Study Assumptions

Average Waste Composition:
North Glengarry, Sudbury, and Calgary

- Paper 37%
- Plastics 16%
- Metals 4%
- Glass 5%
- HSW 1%
- Compostables 29%
- Other 8%

Recycling maximized ✓
Composting maximized ✓
Residuals ?
Study Assumptions

Source Separated Organics (SSO)

www.calgary.ca/waste

www.reddeer.ca

Recycling maximized ✔
Composting maximized ✔
Residuals ?
Study Assumptions

Mixed Waste (MW)

- Recycling maximized ✔
- Composting maximized ✔
- Residuals ?
# Study Assumptions

## 20,000 Population

<table>
<thead>
<tr>
<th>Material</th>
<th>Baseline</th>
<th>Source Separated Organics</th>
<th>Mixed Waste Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Residual Treatment</td>
<td>SSO</td>
<td>Residual Treatment</td>
</tr>
<tr>
<td></td>
<td>Tonnes</td>
<td>Tonnes</td>
<td>Tonnes</td>
</tr>
<tr>
<td>Paper Fibres</td>
<td>1,721</td>
<td>232</td>
<td>1,489</td>
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<tr>
<td>Plastics</td>
<td>467</td>
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<tr>
<td>Metals</td>
<td>219</td>
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<tr>
<td>Glass</td>
<td>319</td>
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<td>319</td>
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<tr>
<td>Household Special Wastes</td>
<td>48</td>
<td>0</td>
<td>48</td>
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<tr>
<td>Compostables</td>
<td>2,264</td>
<td>1613</td>
<td>651</td>
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<tr>
<td>Other Waste Materials</td>
<td>958</td>
<td>0</td>
<td>958</td>
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<tr>
<td><strong>Total Tonnes</strong></td>
<td>5996</td>
<td>1845</td>
<td>4,151</td>
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</table>
Study Assumptions

- Recycling and organics only:

- **Recycling**
- **Organic Treatment**

- **Landfill**

- Recycling maximized ✓
- Composting maximized ✓
- Residuals ?
Study Assumptions

- Recycling and organics treatment with thermal:

- Recycling maximized
- Composting maximized
- Residuals
Study Assumptions

- Recycling maximized
- Composting maximized
- Residuals

Baseline = Baseline for current diversion
SSO = Source Separated Organics
MW = Mixed Waste Processing
Study Assumptions

- The assumptions were used to arrive at a tonnage the technology option would have to handle.
- This formed the basis of the evaluation.
The following indicators were used to evaluate the five MSW management options:

<table>
<thead>
<tr>
<th>Indicators</th>
<th>General</th>
<th>Environmental</th>
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</thead>
<tbody>
<tr>
<td>Facility Throughput</td>
<td>Major Design Features</td>
<td>Footprint</td>
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<td></td>
<td>Commercial Status in Canada</td>
<td>Landfill Airspace</td>
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<tr>
<td></td>
<td>Approvals Required</td>
<td>Potential Environmental Impacts</td>
</tr>
<tr>
<td>Facility Throughput</td>
<td>Major Design Features</td>
<td>Quality of Processed Organics</td>
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<tr>
<td>Facility Throughput</td>
<td>Commercial Status in Canada</td>
<td>Energy Recovery</td>
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<tr>
<td>Facility Throughput</td>
<td>Approvals Required</td>
<td>Greenhouse Gas Emissions</td>
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<td>Facility Throughput</td>
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</table>
The following indicators were used to evaluate the five MSW management options:

<table>
<thead>
<tr>
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<th>Social</th>
<th>Economic</th>
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<tbody>
<tr>
<td></td>
<td>Public Acceptability</td>
<td>Capital Costs</td>
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<td>Siting Challenges</td>
<td>Operating Costs</td>
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<td>Land Use-Conflicts</td>
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<td></td>
<td>Employment</td>
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<tr>
<td></td>
<td>Dust</td>
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<td>Noise</td>
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<td>Traffic</td>
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<td>Odour</td>
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